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ABSTRACT

Decision makers, policy makers, and influential special interest groups typically view many appropriations for programs that will help the poor, the handicapped, social deviants, etc. as mere expenditures and not as investment which produce substantial results. This paper sets forth several cases which illustrate that people can be an attractive form of investment. No attempt is made to calculate the dollar value of such intangibles as increases in IQ, self-image, and family and individual stability. Consideration focuses on the size of an investment, the amount of earnings and savings which offset the investment, and rate at which that occurs. Exemplary cases include descriptions of an occupational training program for mentally retarded educables and trainables, vocational training for handicapped youths, welfare recipients manpower training, a program for confined juvenile delinquents, and treatment for convicted felons. The conclusion is reached that man is the crucial environment and investment priority. (Author/SHM)

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Amortization Schedules in Human Growth and Developments Investments
The Case for Social Mutation*

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By

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PREFACE

Decision makers, policy makers, and influential special interest groups typically view many appropriations for programs that will help the poor, the handicapped, social deviants, etc. as mere expenditures and not as investments which produce substantial returns. This paper sets forth several cases which illustrate that people can be an attractive form of investment and suggests that the further we move into the future, human abilities--work, creativity, resourcefulness, imagination--may dim the importance of what had heretofore been thought of as our nation's primary resources.

No attempt has been made in this paper to calculate the dollar value of such "intangibles" as increases in I.Q., and self-image, and family and indivudual stability. We look only at the size of an investment, the amount of earnings (or, in some cases, savings) which offset the investment, and the rate at which that occurs.

The underdeveloped human being is often a minus sign in front of the Gross National Product and Taxes Paid columns, is often an inordinate user of services (e.g., mental health, welfare), is sometimes socially disruptive, and is subject to private agonies for which no costs can be fixed--all conditions which cry for investment.

As nature's resources are depleted, the quality of those resources diminishes and the cost of fabricating those resources increases. It follows that investment opportunities in that sector are becoming less attractive.

In addition, there are several untoward aspects of "steady state" in our society. For example, schools assign kids "futures" or places in the pecking order based on such factors as race, family income, level of parental education, school performance, and so forth. Moreover, these "futures" tend to be cyclical--that is, if your father was a migrant worker, the chances are that you will be a migrant

and your children will be migrants. Thus, it seems apparent that the shift toward re-cycling natural resources must be accompanied by a shift away from re-cycling human beings (except, of course, when recycling involves skill upgrading or retraining).

As traditional investment opportunities attenuate, the national pool of available* investment funds must couple with new opportunity structures to maintain its wealth-creating activities. Our experience with the G.I. Bill (now amortized several times over) and a host of other human growth and development programs point to the underdeveloped human being as an investment priority. The underdeveloped human will cost us a lot if we do nothing to develop him (e.g., welfare) or if we do only a little to develop him (e.g., custodial care); if on the other hand, we invest in developmental programs that enhance his life, his productivity, and his income, we will profit from our endeavors.

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* The term "available" is somewhat of a misnomer. The insurance companies, for example, are faced with the problem of finding ways in which to invest the several millions of dollars they receive daily in premiums.

Man has created a world
in which mankind itself
is the crucial environment.

Phillip M. Hauser

Those who make major decisions and formulate basic policies in the American economy have arrived at the point where it is becoming increasingly apparent that past methods of creating and distributing wealth are no longer of maximum appropriateness. Dennison[1], for example, maintains that increases in the numbers educated and increases in levels of educational achievement (i.e., investments in human capital) accounted for 23% of the growth in real national income from the beginning of the Depression until 1957. The increase in capital outlay, on the other hand, accounted for only 15% of such income. Normally, social and technological change offer a greatly increased choice in the kinds and amounts of our investments. In materials development, for instance, as distinct from human growth and development, there are certain areas where we do not have much choice. Copper mining is a case in point. In 1900 we processed ores containing 5% copper; by 1950 the copper content had dropped to .9% and estimates are that we will continue to process ore even when the copper content is down to .1%[2]. In the area of human growth and development, we are also limited in choice by certain <u>necessary</u> investments. Dr. Lee DuBridge, President of the California Institute of Technology, provided an example in quite individual terms.

> "There is one staggering fact which we must keep in mind; education in America today is an enormous enterprise--so enormous, in fact, that of all our institutions and activities only the federal government itself exceeds it in size. We are spending some $27 billion a year on our schools (excluding our colleges)--an average of $532 per year for each of the 50 million pupils enrolled. This means an average contribution of $360 a year for every employed person in the country. Even a very modest program of improving our schools would cost another $3 billion a year, or another $40 per employed person. Yet in the next few years we

must surely double our school expenditures--adding another $300 to $400 a year per person."

In general, however, it should be kept in mind that social and technological change generate new needs, new resources, new priorities, and new techniques for solving problems. The phenomenon of evolving social and technological change often makes for greater choice in terms of investment possibilities and greater investment opportunities as measured by the size of the investment relative to the size of the payoff and by the rapidity of the return on investment.

Given the range of choices available to us as investors in the area of human capital--entrepreneurs who conduct growth and development interventions--there are a number of "guide statements" which should be kept in mind. Many of these considerations may not hold up in all cases and the following list is certainly not all-inclusive:

1. Early intervention is cheaper and more effective than tardy intervention (e.g., pre-school programs).

2. Piggyback interventions (tacking a new intervention on to an existing program) are attractive in terms of cost/payoff (e.g., a public school remedial reading program).

3. Additional investment increments must be added (e.g., in the corrections field) where the size of the original investment (cost/person/year) was simply not enough to get the job done.

4. Investments must sometimes be made with long-tern savings rather than "profits" as the goal (e.g., the area of mental retardation).

5. Chronic dependency is a primary area of intervention (shifting from maintenance to coping, as in training for welfare mothers).

6. Preventive interventions (e.g., immunization) are cheaper than treatment interventions (polio hospitals).

7. Areas of underinvestment (e.g., early learning programs for the handicapped, adult illiteracy, birth control, corrections) produce attractive payoffs.

8. Developmental interventions, whenever possible, are to be greatly preferred to mere custodial care expenditures (e.g., cognitively oriented pre-school rather than of a day care babysitting nature).

9. Some investments (e.g., eye glasses, screening for phenylketonuria, immunizing against rubella) produce payoffs fantastically out of proportion to the size of the investment. Moreover, amortization sometimes begins at the moment of intervention, producing both instant savings and "profits."

The examples provided in the "guide statements" above are typical human growth and development activities. These interventions, or, more properly speaking, investment opportunities, all have pre-determined price tags, fairly specific investment returns (i.e., outcomes as measured in dollars), and generally measurable rates of return on investments (i.e., amortization schedules). These three ingredients cost, payoff, and recoup rate--are always overlayed on a grid containing such items as moral impetus, management science considerations, necessary sequences, shifts in priorities, and the simple constraint of what is do-able in terms of public pressures. Thus, for example, the conquest of outer space became a priority and the conquest of inner space bacame a backburner item; the day care bill was scuttled and a massive attack on cancer was mounted.

In any event, the idea of investment in human capital (and the attendant short amortization schedules) remains an attractive argument (and economic tool) in the armamentarium of human growth and development investment strategists. This can be illustrated by examining a few typical cases.

Case #1 - Occupational Training Program for the Mentally Retarded Educables (Competitive Employment)

The mentally retarded may always be with us, for we are up against an inexorable epidemiology and a sloppy state-of-the-art of prevention. A retarded child is born every five minutes (126,000/year) and out of every 600 births, one child is a mongoloid.[4] These are facts we can't ignore. Nor can we ignore

several other facts: i) "An estimated two million retarded persons capable of learning to support themselves need job training and placement services. Even at minimum wage, these individuals have a potential annual (underlining mine) earning capacity of $6 billion."[5]

We can establish amortization* figures for the mentally retarded, but these are dependent upon the developmental potential of the individual learners involved and the differential training costs. Thus, if development costs are $2,500/learner/year, turnaround* may be achieved in less than one year; if they are $4,000/learner/year, turnaround could take 1.4 years or more. In the case of the more severely retarded, where the training program might last, say, four years, the turnaround figures would be multiplied by a number less than four, since there is some productivity in the sheltered workshops that are a part of the training program.

Where applicable, we can crank into our computation other dollar data, such as welfare savings. However, as was stated earlier, no attempt has been made to quantify such "intangibles" as the lessening of socially disruptive behavior, increases in family stability, personal satisfaction, etc.

It should be mentioned in passing that programming for the mentally retarded in schools is an area of chronic underinvestment. For example, "Half of the nation's 25,000 school districts offer no clases for pupils having special learning problems. Many of the existing special education classes do not offer retarded students opportunity to learn and achieve to their full capacity."[5]

Lastly, there is another aspect of developing the mentally retarded which is deserving of comment and that is the possibility of quantum jumping. We know that through intensive teaching and educational technology we can effect I.Q.

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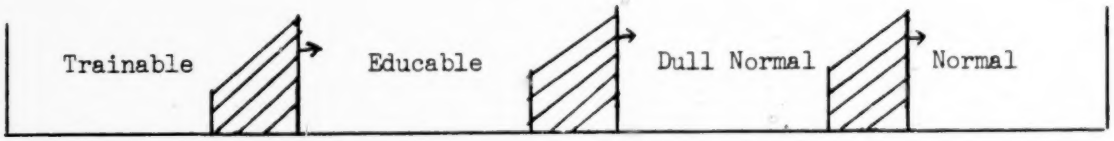
*The terms "amortization" and "turnaround" are used interchangeably in this paper.

increases. Now, consider the following spectrum:



The shaded sections represent persons in the upper end of each category in whom we were able to produce I.Q. gains of five to ten points,* thereby enabling them to switch categories. At one extreme, in some cases, we will be saving lifetime costs of institutionalization on the order of $150,000 to $200,000; in other cases, we may be able to increase the dollar value of lifetime productivity by 30% or more.

Case #2 - Vocational Training Programs For Handicapped Youths

An early study of a Manpower Development and Training Act program by Cornelson[6] (where N=13,000) parameterized the program as follows:

1. Pre-program penalty costs (unemployment compensation and welfare payments) amounted to $3.5 million, which were turned into savings as a result of training.

2. Developmental or Investment Costs:

   a. Training costs were $6.4 million

   b. Training allowances (household heads and farmers who earned less than $1,200/year) amounted to $6.3 million

   c. Transportation and other subsistence allowances amounted to $653,000. (Total developmental costs came to $13.3 million for the 13,000 trainees, or $1,045/Trainee.)

3. The program incurred penalty costs of 20% due to dropouts.

4. Of the remainder, 70% found jobs immediately (30% later) and it is the earnings of the 70% who were immediately employed on whom the return on investment is based.

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* We can effect even larger I.Q. gains among ghetto residents, children in orphanages, etc. in whom "retardation" is environmentally induced. This also applies to the 20%-25% of those institutionalized who have been misdiagnosed as retarded.

5. After the 70% (7,111) had worked 24 weeks, they earned $13.7 million--that is, training took roughly 0.4 years; turnaround, as measured only by gross income and not taking into account prior minus signs in the income tax and GNP columns during training, took less than .87 years.

6. Cornelson maintains that other indices show the following:

   a. In income tax alone, the trainee repaid the cost of his development in five years;

   b. In one year of employment the trainee earned $1,000 more than his training costs;

   c. In five years the 13,000 trainees, achieved, per $13.3 million invested, gross earnings of $148 million.

Obviously there are other, more intangible factors here which are not easily measured, such as the progress from hopelessness to hope, from negative self-image to positive self-image, from unstable family to stable family, etc.

We recently analyzed the results of a vocational training program for handicapped/disadvantaged persons in a large urban area. Typically, the data were not expressed in ways that make for most convenient handling. Also, there are some apparent discrepancies (i.e.; training costs may be more than double those avowed). We begin, however, with some pre-program penalty costs--in this case, 3,600 men and women who would normally be on one or more forms of public assistance. The announced training costs are $900/person, but, in reality, these costs may be in excess of $2,200/person. Dollar equivalents of skill levels are not mentioned, nor are dropout rates or other forms of attrition (e.g., the "loss point" which occurs between registration and intake). The measure of success reported is the addition of some $8 million a year to the city's purchasing power. The skill range in this program encompassed cosmetology, electronic assembly,

tool and die, sewing production, food services, sheet metal, etc. The arithmetic, as usual gets murky, but the turnaround average (keeping in mind the varying lengths of training sequences) is probably on the order of 10.9 months. The very flexibility of this particular training program complicates the arithmetic, since there is no concept of graduation. When a sheet metal trainee, for example, masters the 40-odd configurations of sheet metal work, he moves immediately into employment and a new trainee takes his place in the program.

One final observation must be made concerning most occupational training programs and that is, they all consistently underinvested in the pre-vocational (adult basic literacy) program component. A modest additional investment would enhance the worth of the individual trainee and would help the trainee acquire new skills more easily. Admittedly this would prolong turnaround, but it would produce a larger payoff.

Case #3 - Welfare Recipients Manpower Training

There is absolutely no substitute for development, including such welfare forms as guaranteed income. These programs, beset with inadequacies (minimal allowances, mal-administration, etc.), are non-developmental. They keep people on the dole and, in fact, undermine existing anti-poverty programs. The annual costs of welfare in the northeast range from $1,800 to in excess of $3,000/family. Moreover, many welfare recipients tend to be cases of chronic dependency. As a matter of fact, we have now succeeded in producing four generations of families who have never been off public assistance. The cost of four lifetimes of welfare, depending upon family size, could well come to over $400,000. This is quite a price to pay considering that no betterment takes place. In fact, this program breeds an astounding array of other social and dollar costs--alcoholism, family instability, crime and delinquency, cultural deprivation, physical and mental illness, and the like. It is clear,

then, that chronic dependency will have to be grappled with by investors in human capital. However, before we can do so with any efficiency, certain policy changes will have to come about, such as the provision of day care services for female household heads, the elimination of "the man in the house rule," the identification of able-bodied recipients, the provision for adequate living allowances (rather than stacking the deck against the potential refugee from poverty), and the expansion of the neighborhood services of anti-poverty programs so as to give welfare recipients a better chance to cope with their unresponsive and hostile environments.

When these policy changes have been made, we, as <u>investors</u> are faced with training costs of $1,000 to $5,000 per trainee, the cost depending on the kind of training sequence selected and its duration, the amount of day care services involved, and so forth. One form of turnaround for this program is when the savings in unpaid welfare checks plus the gross earnings of the trainee equal the cost of training and related services. Let us assume the following:

a) $200/month in welfare payments saved ($1800)

b) $400/month in training costs, including day care and living allowance ($3600)

c) A training sequence of nine months ($3,600)

d) A post-training income of $300/month ($3,600/year)

From the above, it is clear that turnaround takes place in slightly less than 1.5 years. We could further embellish this with additional calculations, such as those made by Cornelson in the previously cited work, but the basic point has been made. We should also reiterate that some extremely important "intangibles" have not entered into the calculations.

Case #4 - Confined Juvenile Delinquents

The problem of juvenile delinquency is becoming increasingly serious partly as a result of demographic phenomena. A recent Office of Education Report makes the point that, "the 15-to-17 year old age group represents only 5.4 percent of the population, (yet) it accounts for 12.8 percent of all arrests.... (and the) problem in the years ahead is dramatically foretold by the fact that 23 percent of the population is 10 or under."[7] The current cost to the American taxpayer for confined juvenile offenders is $150 million (more than $3,000/kid/year).[7]

Let us consider the case of one institution for delinquents. The problems confronting this institution are fairly typical: it is undermanned, under-budgeted, has a treatment program which is less than totally effective, and has an unacceptable recidivist rate of 40% (N=264). The population at any given point is 660 and the annual cost/boy is $3,400.

The most salient features of a new proposed program are as follows:

- An expanded counseling staff to work intensively with the parents of the boys
- VISTA workers to work with released boys in the sending communities
- An educational program utilizing the latest educational technology (plus other educationally supportive components)

The basic goals of the program are to improve the circumstances of the boy in his home and community, to get the boy up to reading and grade level so he can achieve in school, and to reduce the recidivist rate. The first two goals are clearly tied to the third, the reduction of the recidivist rate, and it is this alone on which our turnaround arithmetic will revolve. Let us make the

following assumptions:

1. The new program will succeed in cutting the recidivist rate of the institution by one-half (N=132). This appears to be a reasonable assumption.

2. Of the recidivist boys (N=132), roughly 20% (N=26) will commit serious felonies resulting in detection, arrest, and court processing costs, etc. of $15,000/boy (i.e., $390,000);

3. The remaining 80% of the recidivist boys (N=106) will be recommitted for an additional year at a cost of $3,400/boy or $360,400.

4. The total cost of the new program will amount to $262,700, or, depending upon the mode of program implementation, something on the order of $400/boy to $600/boy.

In view of the above schemata, where savings on the decreased recidivism amount to $750.000 (i.e., $390.000 plus $360,000), the turnaround should occur, theoretically, in slightly less than 4.5 months. However, even though the institutional treatment program alone takes six to twelve months to be maximally effective, and since the VISTA community program may take the same length of time (maximum community treatment program time may require an additional modest increment of $26,540), we still encounter the phenomenon which we observed earlier, namely, very early amortization.

Case #5 - Drug Treatment Program for Convicted Felons

Narcotics addiction obviously keeps the vast majority of users in states of underdevelopment and engaged in activities that are criminal and socially disruptive. Though almost all users are felons, traditional long-term incarceration is both a costly and ineffective response to the problems of drug users. Community-based treatment programs, such as those of Marathon House, which is based in Providence, Rhode Island, appears to be a most effective and cost-feasible treatment approach.*

*Similar claims are made for methadone maintenance clinics but these programs are not dealt with here.

An examination of the records at Marathon House for a two-year period yielded the following information:

- o 176 were accepted into the program
- o 52 graduated (i.e., were successfully treated) (29%)
- o 108 split (61%)
- o 7 were expelled (4%)
- o 9 were still in treatment (5.1%)

The cost of the program is $10.90 per day per resident (in actuality between $4,000 and $5,000 per year). The cost of one traditional institutional program, announced by the Providence Journal on March 26, 1972, is about $15,000 per inmate or over $41.00 per inmate per day. The Marathon House costs cover room, board, education and rehabilitation, medicine, clothing, urinalysis, recreation, and transportation.

Several other factors bear consideration. Of the splitees, over 60% split in the first 30 days (which puts the loss at the front end where little money has been expended, as opposed to the loss rate in prisons, where the loss is at the tail end, where many custodial dollars have already been expended. Of those graduating from the program, ninteen (36%) work for Marathon House with an expanded treatment population and fifteen (26%) work in other drug programs, constituting additional program impact. Of the remainder, twenty (38%) are either in education full time or in other employment. A two-year follow-up on the graduates shows two (4%) failures (one is back on drugs and the other defaulted on a loan).

Let us now take a closer look at cost factors. Viewing Marathon House as an alternative to traditional incarceration, we can say that typical costs for thirty days of incarceration would have amounted to $1,230 per person. The Marathon House cost for thirty days is $327, which yields a saving of $903. Thus, for the 60% of the splitees who leave during the first thirty days (69 persons)--let us say they all leave on day thirty--the Marathon House program represents

savings of $62,307 over the prison program. However, some of the 115 splitees will commit new felonies before being incarcerated, resulting in very high social and dollar costs. Had Marathon House opted for a rigorous screening system which accepted only low-risk offenders, the costs for the splitees could have been reduced to acceptable limits. As it now stands, the splittee costs are the price of experimentation.

The cost of keeping 176 persons (the number accepted into the Marathon House program) in prison for one year is $2,633,840; the Marathon House cost is $700,216, which shows a cost differential of $1,933,624. The differential for two years, which is the average length of stay at Marathon House is $3,867,248.

If we regard the cost of the splitees as representing a saving over the prison program, and disregarding the fact that some of the 39% who split between day thirty and day 730 may actually be successes, the cost of the graduates is $230,753. The prison costs are much higher and for longer periods of time and the prison recidivist rate equals or exceeds the splitee rate. Let us go back now for another look at the rehabilitative payoff of the graduates.

A total of six graduates are in full-time education (read this as deferred income, with relatively higher future income expectancies). The number of graduates working in either Marathon House or other drug programs is 34 or 66% of the graduates. The graduates working in drug programs have an average annual salary of $7,000 plus. Those in "other employment" have an average annual salary of $8,000 to $9,000 per year. It should be said here that both graduates and undergraduates work in certain prevention programs (i.e., Rubicon Coffee Houses) and helping programs (i.e., day care, mental health, and juvenile court programs) whose dollar value we have thus far been unable to compute.

With regard to program amortization, we can make the following statements:

- o The earnings of only those working for one-year in drug programs alone amounts to $238,000, which amortizes the costs of the two-year program for all the graduates in less than one year.
- o Those in "other employment" earn an above-amortization sum of $119,000 in one year.
- o Those in the deferred income program (six in full-time education) will have an average annual salary of $60,000.

Here again we have the phenomenon of very fast turnaround. We have not listed other tangible program benefits, such as the Marathon House Theater Group, which puts on anti-drug plays all over the country, nor "intangible" payoffs attendant upon converting despair to hope and wrecked lives to lives of promise. Taking the GNP and HEW's "Social Indicators" together, interventions of the kind typified by Marathon House are an attractive investment.

Case #6 - Occupational Training for Mentally Retarded Trainables (extended sheltered employment)

Data from the 1971 annual report of Handi-crafters, Inc., a sheltered workshop* in Thorndale, Pa. show the following:

- o These were 187 trainees in the program
- o Expenditures amounted to $304,446
- o Income generated from contracts was $65,576
- o Income from other sources was $245,381
- o The "excess" of $6,511 was put back in the form of new equipment purchases and in increases in the value of fixed assets
- o The trainee were paid salaries amounting to $55,849

The costs of the program per individual per year is $1,312.20, which is attractive, especially when compared to alternative costs such as institutionalization,

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*There are some mental patients and Veterans Administration clients mixed in with this population.

which amounts to $5,840/person/year. Even welfare costs for all 187 on public assistance ($1,716) are higher than the sheltered workshop costs.

In addition to the "excess" which is generated each year, there is another bonus in the sense that 32% of the trainees (60) are able to enter competitive employment. It should also be noted that $55,849, in the form of increase purchasing power, is plowed back into the economy. We can therefore make the following statements: the costs for the 60 who go into competitive employment are amortized in .5 years; the costs for those in extended (perhaps lifetime) sheltered employment represent an annual saving of $575,156 over institutional costs and a saving of $51,390 over welfare costs.

In view of the alternatives, investments in sheltered workshops appear to be attractive opportunities. The long-range goal of Handi-crafters is to become as self-sustaining as possible by investing "excess" to buy more equipment to bring in new contracts and thus keep increasing income through work. Progress toward this goal increases the attractiveness of the investment.

For all human growth and development programs to be optimally effective the best available current techniques should be identified and utilized. One such set of exemplary training practices has been articulated by a group in the Human Resources Research Organization (HumRRO). Their report, "The Development of a Low-Cost Performance-Oriented Training Model," outlines the following instructional policy:

- Performance orientation (i.e., establishing performance objectives based on task analysis)
- Learning in a functional context (e.g. on-the-job training)
- Self-pacing (i.e., setting realistic goals for differential learning paces and styles and motivational levels)
- Insistence on mastery (quality control through sequential mastery)
- Rapid and detailed feedback to trainees (eliminate "end-of-cycle exams")
- Rapid and detailed feedback to instructors (permit and facilitate instructional modification)

Once an investment decision has been made —for example, to de-institutionalize the retardate population and enroll them in training programs — the soundness of an investment (the amount of payoff, rapidity of amortization, the minimization of attritions, etc.) can be bolstered by utilizing the best developmental practices, including the periodic evaluation of these practices and program components such as diagnosis and work sampling. In other words, decisions about when and where to invest should be accompanied by the development of constraints to optimize the payoff of the investments.

As stated earlier, numerous other cases could be worked out--college students, adult illiterates, the acceleration of the gifted, brain damanged students, emotionally disturbed students, institutionalized emotionally disturbed patients, skill upgrading of the marginally employed, to name only a few. However, a note of caution must also be raised. The working out of the arithmetic of amortization cannot be done in a vacuum. Our investment in human capital strategies must take into account such questions as, "Will the jobs be there for the people we train? Will discrimination undermine some of our best efforts? How much re-training will be required to combat skill obsolescence? What per cent of the various target populations will defy our most determined efforts to reach them?" And so forth.

As long as we keep these planning caveats in mind, we can move with confidence into a social and economic future in which the expanding increase in the service sector of our economy will present an intriguing array of new investment possibilities and opportunities. In fact, based on the foregoing cases, we arrive, at two conclusions--one elated and one rueful. The elated conclusion: investment in people is the optimum contemporary wealth producer and that even modest investments can produce payoffs. The rueful conclusion, given past patterns, such as our tolerance of long-term non-developmental costs and our consistent proclivity to underinvest in certain attractive areas, is that we have been pretty inefficient about how we have been investing our money.

Non-developmental costs include the punishment syndrome. We are apparently willing, perhaps even eager, to absorb huge costs to keep adult felons locked up in non-developmental postures. We also, apparently, are willing to accept recidivist rates of 70% plus. The developmental option, in the case of convicted felons, would be less than 50% of the cost of existing custodial programs. Similarly, we seem willing to tolerate the cost of non-promotion (i.e., punishment) of students, which has been computed as over one and one-half billion dollars per year, rather than re-design a system to provide workable programs for all students. Part of the punishment syndrome is the economically suicidal attitude of "coddling criminals" and "wasting money on the helpless." The punishment syndrome manifests itself in all the social deveopment programs — welfare ("welfare bums"), education (college bums and racially inferior), and health (socialized medicine radicals) — though not the NASA, AEC, and DOD programs.

The current abounding evidence of catastrophic school failure and underachievement, correctional and rehabilitative failure, and masses of people languishing in underdevelopment and unable to enter that club called "the economy," suggest that we had better learn the lesson of investing in human capital. Man has indeed "created a world in which mankind itself is the crucial environment."

Man is a temporal being, and thus has only one life, one potential, which is discrete and finite. In some future and far-off Nuremburg, the oligarchic crimes of human neglect, waste, and repression, no matter how "benign," it will be perceived that all manifestations of human underdevelopment are morally indefensible: none of we human ephemera is expendable.

Thomas Jefferson believed in the phenomenon of heterosis (i.e., social hybird vigor). Professor Glazier, of The University of Buffalo, makes a newer point: "When I'm optimistic, I feel America has a fountain of energy. We no longer get our vitality from the immigrant quotas but from the non-people who are becoming people — the blacks, orientals, American Indians, Mexican-Americans... There's a world-wide people's revolution, as Martin Luther King said, and the

United States is always on the wrong side."*

Professor Boulding's thesis, in a splendid little book that ought to be read by everyone[9], is that we are currently in transition from a civilized to a post-civilized society. In this period, he sees the so-called "knowledge industry" as our "most important surplus." The further we move into the future, "formal education and organized research become of increasing importance, for the body of knowledge becomes so large that the informal methods of transmitting it and extending it become quite inadequate. It is therefore not surprising that this middle period of transition witnesses a great increase in the amount of resources devoted to the formal education, especially higher education, and organized research and development. Indeed, once the early stages are passed the capacity of a society to develop depends very largely on the proportion of its resources which it devotes to formal education and research."[9]

One could have added to the above the terms "training" and "rehabilitation," since these are the handmaidens of education and other aspects of the human G and D spectrum. In any event, the perceptions of Hauser and Boulding come together: man is the crucial environment and the investment priority. While generations of scientists have devoted considerable energy to figure out ways of beating the Second Law of Thermodynamics, investments to produce social mutations — the quantum jump from one state of being to another, hopefully through the intermediate stages of development to the realization of full potential, suggest that the answer may lie in man himself. The formula calls for taking one form of energy, dollars, and transducing that into improved and increased productivity through rehabilitation, training, and education, which, in turn, transduces into more dollars and other "intangibles."

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*Personal communication, March 1972.

Footnotes

1. Edward F. Dennison, The Sources of Economic Growth in the United States (New York: Committee for Economic Development, 1962).

2. President's Materials Policy Commission, Resources for Freedom, (Washington: U. S. Government Printing Office, 1952).

3. Lee DuBridge, "Dollars Vs Dreams," presented before the National Educational Association, Statler-Hilton Hotel, Washington, D. C., October 20, 1967.

4. "The Problem of Mental Retardation," U. S. Department of Health, Education and Welfare, Secretary's Committee on Mental Retardation (Washington, D. C.: GPO, 1966).

5. President's Committee on Mental Retardation, "A First Report to the President on the Nation's Progress and Remaining Great Needs in the Campaign to Combat Mental Retardation," (Washington, D. C.: GPO, 1967).

6. Leroy A. Cornelson, "The Economics of Training the Unemployed," School Life, October 1964.

7. U. S. Office of Education, "Opening Doors Through Educational Programs for Institutionalized Delinquents," (Washington, D. C.: GPO, 1967).

8. Kenneth Weingarten, et. at., "The Development of a Low-Cost Performance-Oriented Training Model," Symposium Presentation at the American Psychological Convention, Miami Beach, Florida, September 1970.

9. Kenneth E. Boulding, The Meaning of the Twentieth Century, (New York: Harper and Row, 1965).